Appendix B – Herbicides, Trade Names, Target Species, and Properties

Table B-1. EPA-registered herbicides.[1]

Common Name	Partial List of Trade Names	Target Species (general)
2,4-D	Hi-Dep®, Weedar 64®, Weed RHAP®, Amine 4®, Aqua-Kleen (Amines)	Foliage applied. Selective. Some broadleaf, woody and aquatic plants susceptible. Thistles, sulfur cinquefoil, dyers woad, knapweeds, purple loosestrife, hoary cress, knapweeds
aminopyralid	Milestone®, Milestone VM®	Foliage applied. Selective. Many broadleaf weeds. Tolerated by most grasses. Perennial and biennial thistles, knapweeds, sulfur cinquefoil
chlorsulfuron	Telar DF®, Glean®, Corsair®	Foliage applied. Selective. Some broadleaf plants and grasses susceptible. Dyer's woad, thistles, common tansy, houndstongue, hoary cress
clopyralid	Transline®	Foliage applied. Selective. Many broadleaf and woody species susceptible. Thistles, knapweeds oxeye daisy
dicamba	Banvel®, Vanquish®	Foliage applied. Selective. Some broadleaf plants, brush and vines susceptible. Houndstongue, oxeye daisy, leafy spurge, knapweeds
fluroxypyr	Vista Specialty®, and Vista XRT®	Foliage applied. Selective for control of broadleaf weeds and woody brush. Black henbane, musk thistle, common mullein, field bindweed, leafy spurge
glyphosate	Roundup®, Rodeo®, Accord®,	Foliage applied. Nonselective. Most plants are susceptible. Broad spectrum for broadleaf plants and grasses. Purple loosestrife, field bindweed, thistles, cheatgrass, toadflax
hexazinone	Velpar L®, Pronone 10G®, Pronone MG®, Pronone 25G®, Velpar DF®, Velpar ULW®	Broad spectrum control with some selectivity for conifers. Cheatgrass, oxeye daisy, thistles
imazapic	Plateau® ,Plateau DG®	Foliage applied. Selective. Some broadleaf plants and grasses susceptible. Cheatgrass, leafy spurge, toadflax
imazapyr	Arsenal®, Chopper® Arsenal AC®, Stalker®	Applied pre- or post-emergence. Broad spectrum. Most annual and perennial broadleaf plants, grasses and woody vegetation. Dyers woad, field bindweed

[1] A human health and ecological risk assessment has been completed for the herbicides listed in this table http://www.fs.fed.us/foresthealth/pesticide/risk.shtml

Common Name	Partial List of Trade Names	Target Species (general)
methsulfuron methyl	Escort XP®	Applied pre- or post-emergence. Selective. Some broadleaf weeds and annual grasses. Houndstongue, thistle, sulfur cinquefoil, dyers woad, purple loosestrife, common tansy, hoary cress
picloram	Tordon K®, Tordon 22K ®	Foliage applied. Selective. Most annual and perennial broadleaf and woody plants are susceptible. Grasses are tolerant. Thistles, knapweeds, common tansy, toadflax, leafy spurge
sulfometuron methyl	Oust®	Applied pre- or post-emergence. Broad spectrum. Many annual and perennial grasses and broadleaf plants. Woody vegetation tolerant. Cheatgrass, hoary cress, oxeye daisy, musk thistle
triclopyr	Garlon 3A® (marketed as Renovate 3), Garlon 4®, Forestry Garlon 4®, Pathfinder II®, Remedy RTU®	Foliage applied. Selective. Woody plants, some broadleaf plants, and root-sprouting species are susceptible. Grasses are tolerant. Sulfur cinquefoil, purple loosestrife, knapweed, oxeye daisy, thistle

Table B-2. Quick guide to herbicide properties.

Product Name	Active Ingredient	Restricted[1]	Signal[2]	Human Health Findings				Persist - ence	Mobility	Bird	Fish	Bee
				Cancer[3]	Repro[4]	Neuro[5]	Endo[6]					
Arsenal	imazapyr		Caution	Evidence of non-carcinogenicity				Mod	High			
Banvel	dicamba		Warning	Not classified as a carcinogen				Low	V High			
Amine 4	2,4-D		Danger	Not classified as a carcinogen			Prob	Low	Low-Mod			
Escort XP	metsulfuron methyl		Caution	Not Likely to be carcinogenic				Low - Mod	High			
Garlon 3A	triclopyr (amine)		Danger	Not classified as a carcinogen				Mod	V High			
Garlon4	triclopyr (ester)		Caution	Not classified as a carcinogen				Mod	Low		Toxic	
Transline	clopyralid		Caution	Not Likely to be carcinogenic				Med	V High			
Milestone	aminopyralid		None	Not Likely to be carcinogenic								
Oust	sulfometuron methyl		Caution	Evidence of non-carcinogenicity				Low	Mod			
Pathfinder II	triclopyr		Caution	Not classified as a carcinogen				Mod	Low		Toxic	
Plateau	imazapic		Caution	Evidence of non-carcinogenicity				High	High			
Rodeo	glyphosate		Caution	Evidence of non-carcinogenicity				Mod	E Low			
Roundup	glyphosate		Caution	Evidence of non-carcinogenicity				Mod	E Low			
Roundup Pro	glyphosate		Caution	Evidence of non-carcinogenicity				Mod	E Low			

Product Name	Active Ingredient	Restricted [1]	Signal [2]	Human Health Findings				Persist - ence	Mobility	Bird	Fish	Bee
				Cancer [3]	Repro [4]	Neuro [5]	Endo [6]					
Telar DF	chlorsulfuron		Caution	Evidence of non-carcinogenicity				Mod	High			
Tordon 22K	picloram	Restricted	Caution	Evidence of non-carcinogenicity				Mod	V High			
Transline	clopyralid		Caution	Not Likely to be carcinogenic				Mod	V High			
Vanquish	dicamba		Caution	Not classified as a carcinogen				Low	V High			
Vista Specialty	fluroxypyr		Warning	Not Likely to be carcinogenic				Mod	Mod		Toxic	
Velpar L	hexazinone		Danger	Not classified as a carcinogen				Mod	V High			

[1] Restricted. A restricted use pesticide is a pesticide that is available for purchase and use only by certified pesticide applicators or persons under their direct supervision. This designation is assigned to a pesticide product because of its relatively high degree of potential human and/or environmental hazard even when used according to label directions.

[2] Signal Word. The herbicide label indicates the extent of toxicity by the signal word(s) it carries. The signal word on the label applies to the most serious method or route of exposure. For example, if a herbicide has an acute oral LD50 of 368 (which triggers the signal word "Warning") and an acute dermal LD50 of >2,000 (which triggers "Caution") and is severely and irreversibly corrosive to the eyes (which warrants "Danger"), then the label signal word is "Danger."

[3] The EPA evaluates carcinogenicity (cancer), neurotoxicity, reproductive, teratology (birth defects), and mutagenicity (gene mutation) study results of herbicide effects to animals during the herbicide registration and re-registration processes. The study data is used to make inferences relative to human health.

Cancer column. When assessing possible cancer risk posed by a pesticide, EPA considers how strongly carcinogenic the chemical is (its potency) and the potential for human exposure. The pesticides are evaluated not only to determine if they cause cancer in laboratory animals, but also as to their potential to cause human cancer. For any pesticide classified as a potential carcinogen, the risk would depend on the extent to which a person might be exposed (how much time and to what quantity of the pesticide). The factors considered include short-term studies, long-term cancer studies, mutagenicity studies, and structure activity concerns. (The term "weight-of-the-evidence" is used in referring to such a review. This means that the recommendation is not based on the results of one study, but on the results of all studies that are available.). Diuron is a likely or known carcinogen. However, the EPA's 2002 re-registration assessment of the human and environmental scientific data reinforces a number of regulatory decisions and expert reviews that conclude the use of diuron according to product instructions

does not present an unacceptable risk to human health or the environment

[4] Reproductive column. EPA Registration / re-registration studies for the herbicides addressed in this analysis did not indicate any reproductive issues.

[5] Neurotoxicity column. EPA Registration / re-registration studies for the herbicides addressed in this analysis did not indicate any neurotoxicity issues.

[6] Endocrine disruption column. EPA Registration / re-registration studies for the herbicides addressed in this analysis did not indicate any reproductive issues except for probable issues for 2,4-D. Based on currently available toxicity data, which demonstrate effects on the thyroid and gonads in test animals following exposure to 2,4-D, there is concern regarding its endocrine disruption potential. There have been no studies on 2,4-D that specifically assess its endocrine disruption potential. The EPA determined that a repeat 2-generation reproduction study is required to address these concerns. However, the EPA's 2005 re-registration assessment of the human and environmental scientific data reinforces a number of regulatory decisions and expert reviews that conclude the use of 2,4-D according to product instructions does not present an unacceptable risk to human health or the environment